



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,631	09/25/2003	Dave S. Mahadevan	SC12822ZK	6844

23125 7590 08/19/2005

FREESCALE SEMICONDUCTOR, INC.  
LAW DEPARTMENT  
7700 WEST PARMER LANE MD:TX32/PL02  
AUSTIN, TX 78729

EXAMINER

ZARNEKE, DAVID A

ART UNIT PAPER NUMBER

2891

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/670,631

Applicant(s)

MAHADEVAN ET AL.

Examiner

David A. Zarneke

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 9-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4,7,8 and 20 is/are rejected.
- 7) ☒ Claim(s) 2,3,5 and 21-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/25/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of claims 1-8 and 20-24 in the reply filed on 6/10/05 is acknowledged. The traversal is on the grounds that: (1) the conductive layer species are not mutually exclusive; (2) the coupling of the wire to the leadframe are not mutually exclusive; and (3) group IV should be examined with elected group I.

The species restrictions of (1) and (2) have been withdrawn. Therefore, claims 1-8 will be included in the examined group.

The traversal of grounds (3) is also persuasive, therefore claims 20-24 will be added to the examined group.

As a result, claims 1-8 and 20-24 will be examined.

The remainder of the requirement is still deemed proper and is therefore made FINAL.

### ***Specification***

The changes to the specification dated 6/10/05 have been accepted and approved for entry into the application.

### ***Preliminary Amendment***

The preliminary amendment filed 1/12/04 is acknowledged.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osorio, US Patent 5,317,107.

Osorio (figure 2) teaches a semiconductor package comprising:

a leadframe [14] having a flag [36] and a bond pad [26];  
a semiconductor die [12] attached to the flag and electrically coupled to the bond pad [through wire 24];  
a conductive layer [18] over the mold encapsulant; and  
a wire [40] electrically coupling the leadframe to the conductive layer.

Osorio, which teaches an air encapsulant (3, 48+), fails to teach a mold encapsulant over the semiconductor die.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a mold encapsulant in place of the air encapsulant in the invention of Osorio because they are art recognized equivalents used as dielectrics. Further, the use of a mold encapsulant would further protect the device, especially since the wires could be locked in position and could not become dislodged. The substitution of one known equivalent technique for another may be obvious even if the prior art does not expressly suggest the substitution (*Ex parte Novak* 16 USPQ 2d 2041 (BPAI 1989); *In re Mostovych* 144 USPQ 38 (CCPA 1964); *In re Leshin* 125 USPQ 416 (CCPA 1960); *Graver Tank & Manufacturing Co. V. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

Regarding claim 4, Osorio teaches the conductive layer comprises an element selected from the group consisting of aluminum, copper, tin and zinc (3, 37+).

With respect to claim 7, Osorio teaches the wire is coupled to the leadframe through a pad (4, 3+, wherein the terminal of Osorio is the pad of the claim).

As to claim 8, Osorio teaches the conductive layer is an electromagnetic shield (abstract).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osorio, US Patent 5,317,107.

Osorio teaches a method of forming a semiconductor package, the method comprising:

- providing a leadframe [14] having a flag [36];
- attaching a semiconductor die [12] to the flag;
- forming a conductive layer [18] over the mold encapsulant; and
- electrically coupling the leadframe to the conductive layer using a wire [40].

Osorio, which teaches an air encapsulant (3, 48+), fails to teach a mold encapsulant over the semiconductor die.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a mold encapsulant in place of the air encapsulant in the invention of Osorio because they are art recognized equivalents used as dielectrics. Further, the use of a mold encapsulant would further protect the device, especially since the wires could be locked in position and could not become dislodged. The substitution of one known equivalent technique for another may be obvious even if the prior art does not expressly suggest the substitution (Ex parte Novak 16 USPQ 2d 2041 (BPAI 1989); In re Mostovych 144 USPQ 38 (CCPA 1964); In re Leshin 125 USPQ 416 (CCPA 1960); Graver Tank & Manufacturing Co. V. Linde Air Products Co. 85 USPQ 328 (USSC 1950).

***Allowable Subject Matter***

Claims 2, 3, 5, 21-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

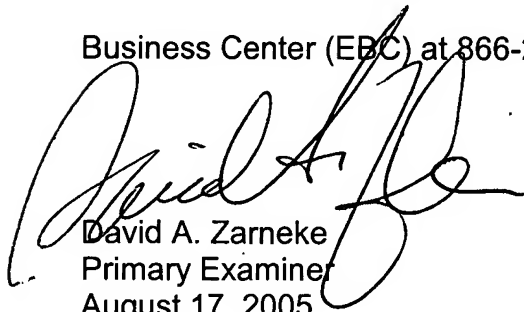
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited but not relied upon teaches the state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Zarneke whose telephone number is (571)-272-1937. The examiner can normally be reached on M-Th 7:30 AM-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Baumeister can be reached on (571)-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2891

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David A. Zarneke  
Primary Examiner  
August 17, 2005